Safety and Occupational Health Plan - REF8016 — CELRD- CESO

GENERAL COMMENT: This whole document seems excessive for all projects. We need some guidance with regard to a simplified approach for small projects. Response: We recognize the diversity of organizations and projects throughout the Corps and expect that this plan would be flexible enough to be applied as appropriate to the size and complexity of the project. The object is to add value – not unnecessary work. We also expect the SOHO training and guidance to clarify what is appropriate early on. After PDTs get past the learning curve, they should be able to apply this plan methodology appropriately in accordance with local SOP.

Scope

This reference document specifies the safety and health hazard management procedures applicable to all projects (throughout the life cycle). The Safety & Occupational Health Plan (SOHP) is a supporting plan that facilitates the implementation of the Project Management Plan (PMP). Safety & Occupational Health, *Risk Management – REF8007[REF8007]*, *Quality Management – REF8008[REF8008]*, *Communications – REF8006[REF8006]*, and *Change Management – REF8009 [REF8009]* Plans are developed concurrently in the iterative Program/Project Planning Phase.

The SOHP shall address how safety and health will be achieved for the product (building, airfield, water control structure, HTRW clean-up project, etc.) and how the process for executing the product will be conducted safely. It shall include specifying by project phase (planning, execution and control, and closeout) the following: safety and health responsibilities, safety and health standards, requirements and criteria, and hazard analysis requirements (Safety Risk Management (SRM)), how safety and health shall be accomplished, independent SOH technical reviews (at concept design and BCOE reviews), and any safety and health testing/assessment requirements.

The SOHP shall consider the hazards associated with all customers throughout the life cycle of the project. Control measures shall provide the appropriate level of protection based on the project goals and the established level of risk acceptance authority (see Appendix A). Deviations from USACE publications require waiver approval from the applicable HQUSACE proponent and shall hinge on the determination of the basis for the deviation and the resulting inherent risk.

Policy

AR 385-10, The Army Safety Program *[http://www.usapa.army.mil/pdffiles/r385_10.pdf]*

EM 385-1-1, U.S. Army Corps of Engineers Safety and Health Requirements Manual
[http://www.usace.army.mil/inet/usace-docs/eng-manuals/em385-1-1/toc.htm]

Distribution

Project Delivery Team (PDT)

Ownership

The BP/P2 Configuration Manager is responsible for ensuring that this document is necessary and that it reflects actual practice.

Responsibility

The Project Manager (PM) is responsible for

- Initiating the development of the SOHP and ensure that it is kept current
- Coordinating with the customer to identify and manage safety and health related hazards inherent to the project
- Assuring hazard controls are successfully implemented
- Coordinating with the local Safety and Occupational Health Office and notify the Commander of all high-risk issues
- Coordinating with the Safety and Occupational Health Office for SOH training of the PDT

The Project Delivery Team (PDT) is responsible for

- Developing the SOHP and identifying and defining potential risks and appropriate responses to risks for the project
- Attending safety and health training necessary to develop a sufficient SOHP

The Safety and Occupational Health Office is responsible for

- Providing training to the PDT on the SOHP development methodology
- Serving as an advisor to the PDT
- Participating in PRB and Line Item Reviews
- Providing safety and health assistance to PM throughout the project life cycle
- Providing SOH program oversight by monitoring, assessment, and evaluation

The Responsible Risk Manager is responsible for

- Accounting to the PM for SOH for their area of responsibility
- Raising issues to the PDT for resolution when the control is not sufficient or appropriate for the hazards

Methodology

The SRM and hazard management processes shall be used in accordance with AR 385-10.

A hazard analysis will be performed for all USACE-managed projects. The level of detail of the risk analysis and SOHP is based on the magnitude of potential hazards and complexity of the project. When a project is determined to be other than low-risk, as defined in the SOHP, the risk must be identified, and associated control procedures defined in the PMP. Only the responsible district or division Commander may provide final PMP approval in the event of an overall project risk rating of high, or very high, respectively.

Development of the Safety & Occupational Health Management Plan:

Program/Project Planning Phase:

- Local Safety and Occupational Health Office will train the PDT on the SOHP development methodology (SRM process, the hazard management process, and the tools to help guide the PDT through the process (See Appendix B for examples))

- Preliminary Hazard List (PHL) Development includes the following:

The PM shall coordinate with the customer and generate a list of potential hazards. For example, the customer for a project on an Army installation may include the facility user, facility engineer, fire department, environmental department, safety department, etc. An example of how to format the input data is shown in Appendix C.

The PDT shall review the available preliminary hazard information in order to develop the SOHP (sources of which can include project background information, Customer PHL *Customer Scope and Requirements Definition – PROC2010[PROC2010]*, Subject Matter Experts, historical records, Lessons Learned Data (Design/Construction/User/Industry) *Lessons Learned – PROC3020 [PROC3020]*, Program/Project Schedule or Sequencing and cost implications *Activity/Schedule Development – PROC2030[PROC2030]*, *Resource Estimate Development – PROC2040[PROC2040]*, Standards and Regulations.

- Perform a Preliminary Hazard Analysis (PHA)

The PDT at this early stage of the project will look at the overall project with emphasis on operations, facilities, structures, and specific hazards that are identified as high or extremely high hazard (see Appendix B for examples) and may consider managing the hazard through an intervention strategy* that goes beyond the typical project methodology. This could be accomplished by using a prescribed sub-process (i.e., ER 385-1-92 for Environmental projects, CEGS, etc.), safety design analysis, formal systems safety effort (AR 385-16), FAR clause to the specifications, special clause to the specifications, review by a Subject Matter Expert, specific construction scheduling or sequencing, or other intervention strategies.

The PDT shall document the identified hazards and the results of the Preliminary Hazard Analysis in a Hazard Tracking List which can be displayed as shown in the table below (see *Risk Management Plan – REF8007[REF8007]*)

Risk	Hazard	Cause	WBS Item Affected	Impact on Project Objectives	Risk Manager	Agreed Response to Risk	Expected Result of Response
H	Harm from chem-icals	Expo-sure to Chem-icals	Investiga-tive, Construc-tion	Cost, schedule slippage	Designer, Construction Mgr, Constructor	Add HTRW CEGS to Design Specifi-cation	L

The PDT shall document the risk decision-making process as shown in Appendix D prior to PMP approval *PMP/PgMP Approval – PROC2070[PROC2070]*

Program/Project Execution and Control Phase

- The Responsible Risk Manager (Design Manager, Construction Manager, Study Manager, Contractor) shall review the Hazard Tracking List and perform a hazard analysis* (design/activity/operational hazard plans) based on up-to-date hazard information (sources of which can include Design Safety Criteria, Standards and Regulations, Industry Safety Standards, USACE Library of CADD Designs, Guide Specifications for Construction, Subject Matter Expert, EM 385-1-1, Safety and Health Requirements Manual, Construction Safety Standards and Regulations, Construction QA/QC Process (incorporated into RMS), Contractor Accident Prevention Plan and Activity Hazard Analysis, Project Change Request Form, and Lessons Learned Database) *Quality Management Plan – REF8008[REF8008]*

* using the SRM process

- The Responsible Risk Manager shall make additions and changes to the Hazard Tracking List as necessary and forward to the PDT to update the SOHP in the corporate AIS.

- The local Safety and Occupational Health Office shall make quality assurance assistance visits from time to time to verify the effectiveness of this SOHP

- The Responsible Risk Manager shall submit lessons learned into the design and construction lessons learned systems *Lessons Learned – PROC3020[PROC3020].*

Program/Project Closeout Phase:

- The PDT shall assure the transfer of hazard information to the user in accordance with *Activity/Project/Program Closeout – PROC4000[PROC4000]* through use of documentation or verbal communications (Owner's Manual, Maintenance Manual, Standard Operating Procedures, As-built Drawings, Warning Signs or Labels, Training)

- The PDT shall finalize and closeout the HTL

- The PDT shall assure all SOH lessons learned are submitted to the lessons learned system *Lessons Learned – PROC3020[PROC3020]*

(Under Development)

Figure 1. Flow Diagram showing SRM and Hazard Management through Project Life-Cycle

Appendix A

RISK DECISION MATRIX

			PROBABILITY				
			Frequent	Likely	Occa-sional	Remote	Unlikely
			A	B	C	D	E
SEVERITY	Catastrophic	I	DIV CDR E		H	H	M
	Critical	II	E	DIST CDR H		M	L
	Moderate	III	H	PgM M		L	L
	Negligible	IV	M	L	PM L		L

Matrix modified from USACE SRM Training CD for application to PMBP

RISK LEVELS

Extremely High	Loss of ability to accomplish mission.
High	Significantly degrades mission capabilities in terms of required mission standards.
Medium	Degrades mission capabilities in terms of required mission standards.
Low	Little or no impact on accomplishment of mission.

Source: Table 3-4 from Draft DA Pam 385-10

PROBABILITY CRITERIA AND DESCRIPTIONS

	A. Frequent	B. Likely	C. Occasional	D. Remote	E. Unlikely
Individual item	Occurs often in life of item or system	Expect several times during item life	Expect sometime during item life	Possible to occur in item life	Assume will not happen in item life
Fleet or inventory of items	Continuously experienced	Numerous cases, but intermittent	Several times in fleet/ inventory life	Isolated incidents	Rare but not impossible
Individual worker	Occurs often in career	Several times in career	Expect sometime in career	Possible sometime in a career	Assume will not happen in a career
All workers exposed	Continuously experienced	Numerous, but intermittent	Sporadic occurrence	Isolated occurrences	Rare but not impossible

Source: Table 3-2 modified from Draft DA Pam 385-10

SEVERITY CRITERIA AND DESCRIPTIONS

I. Catastrophic	Death or permanent total disability, system destruction, major property damage. Lost the ability to accomplish mission.
II. Critical	Permanent partial disability, temporary total disability, major system damage, or significant property damage. Cannot accomplish mission to standards or cannot execute portions of mission.
III. Marginal	Temporary disabling injury, lost workday case, minor system damage, minor property damage. Degrades ability to accomplish mission capabilities to standards.
IV. Negligible	First aid or minor supportive medical treatment, minor system impairment. Little or no impact on mission.

Source: Table 3-3 from Draft DA Pam 385-10

APPENDIX B

HIGH HAZARD PROGRAMS/PROJECTS (Overall)

Programs:

- Environmental
- OEW
- Dredging
- FUSRAP
- Emergency Management
- Dam Safety
- Diving

Projects:

- Tunnels
- Dams
- Munitions Bunkers
- Power/Fuel Distribution
- Chemical Demilitarization Facilities

- Aircraft Hangers
- Distribution Centers
- Dredging
- Hospitals

HIGH HAZARD CONSTRUCTION WORK EXAMPLES:

- Work is performed 25 feet or more above surface
- Work is performed more than 5 feet below ground
- Complex interaction of heavy equipment
- Complex interaction of workers with equipment
- Confined space (when exposure is greater than 10% total project man-hours)
- Testing of high voltage systems (over 600V)
- Testing of high pressure systems (over 100 psi)
- Critical diving
- Critical crane lift
- Tunneling

HAZARD IDENTIFICATION TOOLS:

- Preliminary Hazard Analysis
- Fault Tree Analysis
- Failure Mode and Effects Analysis
- Operating Hazard Analysis
- Event Tree Analysis
- Activity/Job Hazard Analysis (A/JHA)
- Flow Diagram
- Multilinear Event Sequence
- Energy Analysis

- Mission Risk Analysis
- Fault Hazard Analysis
- Interface Analysis
- Statistical or "Data Mining" Analysis
- Cause and Effect Diagrams
- Tree Diagrams
- Change Analysis
- Brainstorming
- "What if" Analysis

APPENDIX C

PHL Sample Format

Narrative:

a. Facility Description to include a description of the operations and activities to be conducted within the facility, estimated value of the facility and equipment it will house, the personnel level and type of occupancy, and the military significance of the facility.

b. A map of the installation illustrating the proposed facility site and the location of any nearby hazardous operations.

c. Specialized or state of the art equipment.

d. Details regarding special or unusual operations.

Data Elements:

Column 1. (HAZARDOUS EVENT) A description of the hazards and/or undesired or unacceptable occurrences.

Column 2. (CASUAL FACTORS) A description of why or how the hazard may result in an accident.

Column 3. (SYSTEM EFFECTS) A description of each significant event resulting from a hazard above which addresses as applicable—

(1) How many people would be affected in a "worst case" probable accident.

(2) How much is known/unknown concerning the control of the hazard and the need for any follow-on analyses?

(3) The degree to which an accident could affect the local community.

(4) The effects the hazard may have on the facility or facility subsystems.

Column 4. Risk Assessment. The initial risk assessment assigned to each uncontrolled hazard or undesired or unacceptable occurrence.

Column 5. (COMMENTS) Provision for comments by the reviewers. May include preparation date, preparer's signatures, and instructions for future contact.

Source: Table 14-2 from Draft DA Pamphlet 385-10

APPENDIX D

Residual Risk Acceptance Sample Format

PART I Description of Residual Risk

1. Facility/Item Identification:

MILCON Project Number:_____ Facility ID _____

2. For each proposed acceptance of a moderate or greater risk associated with an identified hazard, provide the following:

a. Hazard Description and potential consequences:

_____
_____
_____

b. Final Risk Assessment Code: _____

c. Identify source document(s) and/or reference(s):

_____
_____
_____

d. Document any alternative actions to reduce the risk:

_____
_____

e. Proposed by _____ Organization: _____

Date: _____

3. Technical Review by Appropriate Level based on RAC.

a. Reviewed by: _____ Date: _____

b. Reviewer's Recommendations: _____

PART II Approval

Signature: _____ Date: _____

Source: Table 14-9 from Draft Pamphlet 385-10